

REMARKS

Claims 41 and 42 have been added. Applicants acknowledge the restriction requirement as set forth by the Examiner and hereby withdraws and cancels claims 33-40. Therefore, claims 1-32, 41 and 42 are pending in the present application.

The Examiner rejected claims 13-32 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,795,493 (*Bukhman*) in view of U.S. Patent No. 5,375,064 (*Bollinger*). Applicants respectfully traverse this rejection. As explained below, the Examiner expressly ignores the claim language in an attempt to make his rejection.

The Examiner's rejection of claim 13 is discussed first. Claim 13, in part, calls for etching at least a portion of said process layer. Claim 13 further calls for measuring a depth of the etch at a plurality of locations in a first preselected region of the semiconducting substrate, and measuring a depth of the etch at a plurality of locations in a second preselected region of the semiconducting substrate. Thus, according to claim 13, the semiconductor substrate is first etched, and then various depth measurements are taken after the etching. The claim language "measuring a depth of the etch" [emphasis supplied] clarifies that measurements are taken from the etched portion of the semiconductor substrate. Specifically, claim 13 calls for taking measurements from two regions, a first and selected region, of the substrate, where a plurality of measurements are taken for each of the first and second selected region after the etching.

In rejecting claim 13, the Examiner argues that *Bukhman* teaches "measuring the initial thickness" at a plurality of portions of wafer surface and measuring a subsequent thickness of the device wafer at a plurality of locations (col. 8, lines 30-44), read on measuring a depth of the etch

at a plurality of locations in a first preselected [sic] and measuring a depth etch at a plurality of locations in a selected preselected region.” [emphasis supplied]. Thus, according to the Examiner, the step of “measuring the initial thickness” of *Bukhman* satisfies the claimed feature of “measuring a depth of the etch at...a first preselected region,” and the step of “measuring a subsequent thickness” satisfies the claimed feature of “measuring a depth of the etch at...a second preselected region.” The Applicants respectfully disagree.

Bukhman teaches providing a wafer substrate in an etching chamber. See *Bukhman*, col. 8, lines 27-30. Next, before an occurrence of any etching, *Bukhman* teaches measuring an “initial thickness” of the wafer. *Id.* col. 8, lines 30-31. *Bukhman* further teaches differentially heating select portions of the wafer, and then etching the wafer. *Id.* col. 8, lines 32-38. Thus, *Bukhman* teaches measuring the initial thickness of the wafer even before the etching step. In contrast, and as described above, claim 13 calls for “measuring a depth of the etch” of the substrate. Accordingly, none of the cited references teaches this claimed feature. Thus, for this reason alone, claim 13, and its dependent claims, is allowable.

Additionally, while *Bukhman* teaches “measuring a subsequent thickness” of wafer after the etching step (col. 8, lines 39-40), *Bukhman* does not teach measuring a depth of the etch in at least two regions after an etching step, where a plurality of measurements are taken from the first selected region and a plurality of measurements are taken from the second selected region. Accordingly, claim 13 and dependent claims are allowable over the applied references.

Claim 23 calls for etching at least a portion of said process layer. Claim 23 further calls for measuring the first depth of the etch at a first location in a first preselected region of the semiconducting substrate, measuring a second depth of the etch at a second location in a second preselected region of the semiconducting substrate. For reasons already explained, **Bukhman** teaches measuring the “initial thickness” of the wafer even before the etching step. In contrast, claim 23 calls for etching the substrate and then “measuring a depth of the etch” of the substrate. For this reason, claim 23 and its dependent claims are allowable.

Claim 23 is allowable for an additional reason. As noted above, claim 23 calls for measuring a first etched depth and the second etched depth. Claim 23 further calls for comparing the first depth to the second depth. Thus, claim 23 calls for measuring two depths after etching and then comparing the two measured depths. The Examiner admits that **Bukhman** does not teach the comparing step, but argues that **Bollinger** teaches comparing the first depth to a desired depth. See Office Action, page 4. In particular, according to the Examiner, **Bollinger** “discloses step (34) to determine if the measured thickness profile (*i.e.*, measure depth of the first preselected region and second preselected region) is etched to a predetermined or desired thickness (*i.e.*, desired depth).” *Id.* Thus, by the Examiner’s own admission, **Bollinger** teaches comparing the measured depth of the first preselected region and the second preselected region to a desired depth. In contrast, claim 23 calls for comparing the two measured depths to each other (*i.e.*, comparing the first depth to the second depth), and not to some “desired depth.” Accordingly, claim 23 and its dependent claims are allowable for this reason.

Newly added claims 41-42 include additional features that are not taught by the cited references. Claims 41 and 42 call for varying the temperature of the subsequently processed semiconductor substrate comprises varying the temperature of the second semiconductor substrate, where the second semiconductor substrate comprises another semiconductor substrate to be processed subsequent to the process of the first semiconductor substrate. None of the cited references teach this claimed feature. For example, *Bukhman* teaches continuously modifying the heating profile map for a wafer currently being processed until that wafer has been etched to a desired depth. See Figure 6 of *Bukhman*. As shown in Figure 6, the initial thickness of a wafer is measured, a heating profile map is generated, the wafer is differently heated and etched based on the profile map, and this process is repeated (as represented by the loop 150) until the wafer is etched to a second thickness 200. The above steps are thereafter repeated for each subsequently processed wafer (*i.e.*, a new profile map is generated based on the measured initial thickness). In contrast, claims 41-42 call for varying the temperature of the second semiconductor substrate based on the depth comparisons recited in the respective independent claims. Accordingly, claims 40-41 are also allowable.

Applicants acknowledge that the Examiner allowed claims 1-12. In light of the arguments presented above, Applicants respectfully assert that claims 13-32, 41 and 42 are allowable. Accordingly, a Notice of Allowance is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the undersigned attorney hereby requests an interview with the Examiner to discuss the steps necessary for placing the application in condition for allowance.



Respectfully submitted,

WILLIAMS, MORGAN & AMERSON, P.C.
CUSTOMER NO. 23720

Date: January 12, 2004

By: _____

Ruben S. Bains, Reg. No. 46,532
10333 Richmond, Suite 1100
Houston, Texas 77042
(713) 934-7000
(713) 934-7011 (facsimile)
ATTORNEY FOR APPLICANT(S)